Name: Joseph and Zouyuan

Initial decisions

Programming language is Python on the reason that this will reduce the complexity of the program with its dynamic typing and powerful library. Python also have a powerful feature of lambda operation with commonly used for traversing arrays of object.

Internal Architecture

The main data structure used is an object or hashtable. The object is called student with the purpose as a main schema for all students.

Task Log

Task Name	Student	Start Time	End Time	Total hour
Implements the data structure, Student class and helper functions, main program prompt also quit command	Joseph, Zuoyuan	January 8 12.00pm	January 8 12.30pm	1/2
Implements the Student and Teacher commands	Joseph, Zuoyuan	January 8 12.00pm	January 8 1.00pm	1/2
Implements the Bus, Grade and average commands	Joseph, Zuoyuan	January 10 12.00pm	January 10 1.00pm	1
Implements the Info command	Joseph, Zuoyuan	January 12 12.00pm	January 12 12.15pm	1/4
Testing, creates test file	Zuoyuan	January 12 12.00pm	January 12 12.00pm	3/4
Create write up Report	Joseph	January 8 12.00pm	January 812.30pm	3/4
Finish Up test file and report	Joseph	January 16 8.00pm	January 16 9.00pm	1

Notes on Testing

The main test file is tests.txt, use it with file redirection:

```
python3 schoolsearch.py < tests.txt > tests.out
```

The schoolsearch program will ignore any comment as it will only detect specific command implemented according to the specification ie, G[rade], B[us], etc. Further detail of each detail are recorded in tests.txt. The output of the testfile will be in tests.out
The test able to be parsed in but output will not be check automatically

Part 2

Task Name	Student	Start Time	End Time	Total hour
Change the basic data structure and adjust the change	Joseph, Zuoyuan	January 17 12.10pm	January 17 1.00pm	5/6
Implements the Student and Teacher commands	Joseph, Zuoyuan	January 17 12.00pm	January 17 1.00pm	1/2
Implements the classroom and enrolment command And idea for analytic	Joseph, Zuoyuan	January 19 12.00pm	January 19 1.00pm	1
Implement the analystic commands	Joseph, Zuoyuan	January 22 12.00pm	January 22 12.30pm	1/2
Update the test case to test the new command	Joseph, Zuoyuan	January 22 12.30pm	January 22 1.00pm	1/2
Finish up the report	Joseph, Zuoyuan	January 22 12.30pm	January 22 1.00pm	1/2

Modification

We decided to change the data storage to include 2 data array Teacher and Student each storing it respective information according to the input format, in the program we connect the both object by implementing a method searching Teacher array via classroom number and returning the teacher info.
For each requirement we implemented new following command:

Requirement NR1. Given a classroom number, list all students assigned to it.
Command : C[lass]: <number>
Example : C:102

Requirement NR2. Given a classroom number, find the teacher (or teachers) teaching in it1 . •
Command : C[lass]: <number> T[eacher]
Example : C: 102 Teacher

Requirement NR3. Given a grade, find all teachers who teach it.
Command : G[rade]: <number> T[eacher]
Example : G: 6 T

Requirement NR4. Report the enrollments broken down by classroom (i.e., output a list of classrooms ordered by classroom number, with a total number of students in each of the classrooms).
Command: E[nrolllment]
Example: E

Requirement NR5. Add to your program the commands that allow a data analyst to extract appropriate data to be able to analyze whether student GPAs are affected by the student's grades, student's teachers or the bus routes the students are on.
Command: P[erformance]: G[rade] <number>
P[erformance]: T[eacher] <LastName>
P[erformance]: B[us] <number>

Example: P: G 6
P: T Cool
P: Bus 52

Each will search according to specified query and display relevant data for further analysis for example searching by Grade will display GPA, teacher, and bus number all factor affecting the student performance.